



# SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## IBM Corporation

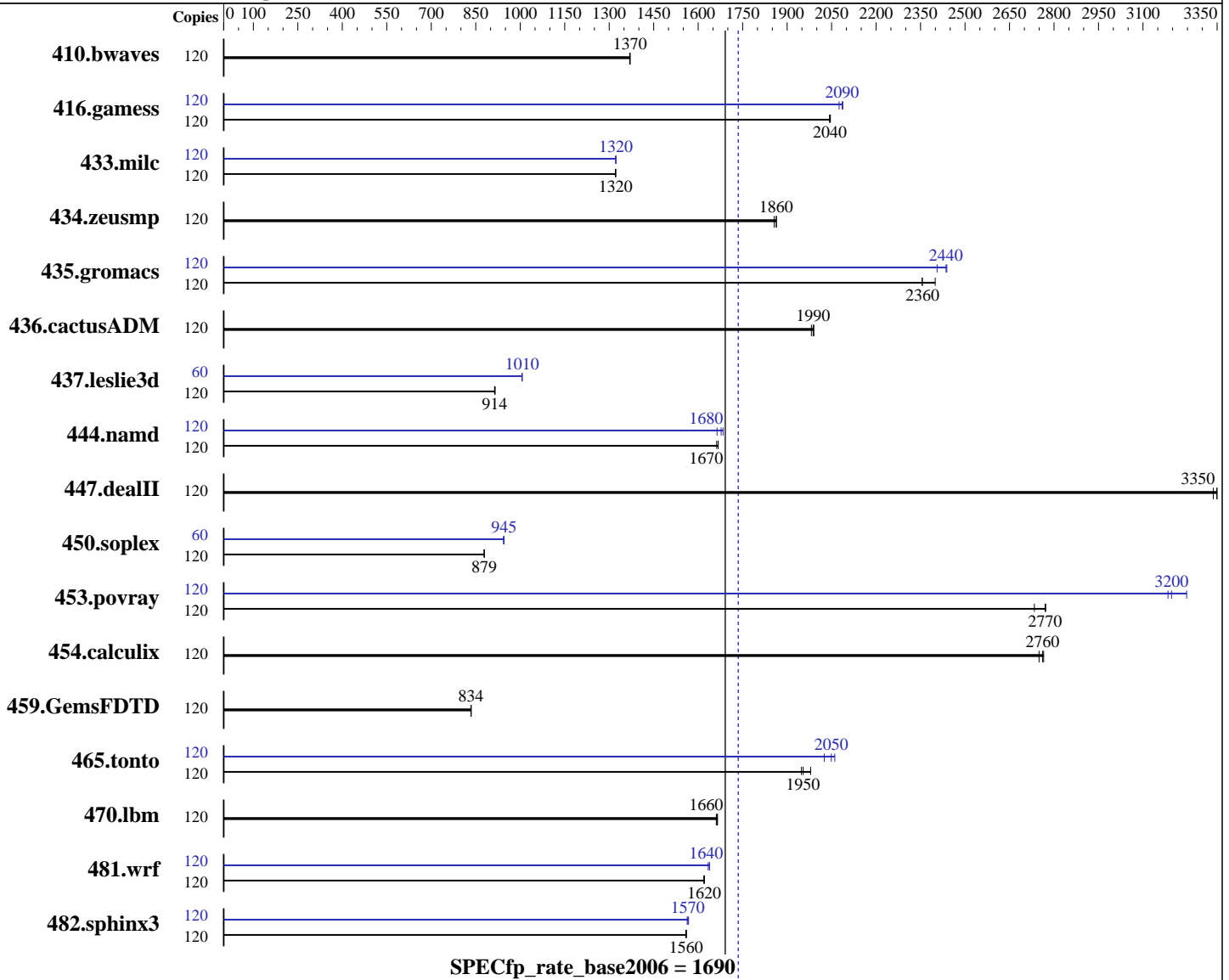
IBM Flex System x480 X6  
(Intel Xeon E7-4890 v2, 2.80 GHz)

SPECfp®\_rate2006 = 1740

SPECfp\_rate\_base2006 = 1690

CPU2006 license: 11  
Test sponsor: IBM Corporation  
Tested by: IBM Corporation

Test date: Jul-2014  
Hardware Availability: Jun-2014  
Software Availability: Nov-2013



### Hardware

CPU Name: Intel Xeon E7-4890 v2  
CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz  
CPU MHz: 2800  
FPU: Integrated  
CPU(s) enabled: 60 cores, 4 chips, 15 cores/chip, 2 threads/core  
CPU(s) orderable: 2,4 chips  
Primary Cache: 32 KB I + 32 KB D on chip per core  
Secondary Cache: 256 KB I+D on chip per core

Continued on next page

### Software

Operating System: Red Hat Enterprise Linux Server release 6.5 (Santiago)  
2.6.32-431.el6.x86\_64  
Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;  
Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux  
Auto Parallel: No  
File System: ext4

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## IBM Corporation

IBM Flex System x480 X6  
(Intel Xeon E7-4890 v2, 2.80 GHz)

SPECfp\_rate2006 = 1740

SPECfp\_rate\_base2006 = 1690

CPU2006 license: 11  
Test sponsor: IBM Corporation  
Tested by: IBM Corporation

Test date: Jul-2014  
Hardware Availability: Jun-2014  
Software Availability: Nov-2013

L3 Cache: 37.5 MB I+D on chip per chip  
Other Cache: None  
Memory: 1 TB (64 x 16 GB 2Rx4 PC3L-12800R-11, ECC, running at 1333 MHz)  
Disk Subsystem: 1 x 300 GB SAS, 10000 RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	120	1191	1370	1190	1370	<b>1190</b>	<b>1370</b>	120	1191	1370	1190	1370	<b>1190</b>	<b>1370</b>
416.gamess	120	1150	2040	1148	2050	<b>1150</b>	<b>2040</b>	120	1132	2080	1125	2090	<b>1127</b>	<b>2090</b>
433.milc	120	834	1320	<b>833</b>	<b>1320</b>	833	1320	120	<b>833</b>	<b>1320</b>	833	1320	833	1320
434.zeusmp	120	588	1860	586	1860	<b>586</b>	<b>1860</b>	120	588	1860	586	1860	<b>586</b>	<b>1860</b>
435.gromacs	120	<b>364</b>	<b>2360</b>	357	2400	364	2350	120	<b>352</b>	<b>2440</b>	351	2440	356	2410
436.cactusADM	120	721	1990	724	1980	<b>721</b>	<b>1990</b>	120	721	1990	724	1980	<b>721</b>	<b>1990</b>
437.leslie3d	120	<b>1235</b>	<b>914</b>	1235	914	1232	916	60	<b>560</b>	<b>1010</b>	561	1010	560	1010
444.namd	120	579	1660	<b>577</b>	<b>1670</b>	577	1670	120	<b>574</b>	<b>1680</b>	571	1680	578	1660
447.dealII	120	411	3340	410	3350	<b>410</b>	<b>3350</b>	120	411	3340	410	3350	<b>410</b>	<b>3350</b>
450.soplex	120	<b>1139</b>	<b>879</b>	1139	879	1139	879	60	530	943	529	945	<b>530</b>	<b>945</b>
453.povray	120	230	2770	<b>230</b>	<b>2770</b>	234	2730	120	<b>200</b>	<b>3200</b>	200	3180	197	3250
454.calculix	120	360	2750	358	2770	<b>358</b>	<b>2760</b>	120	360	2750	358	2770	<b>358</b>	<b>2760</b>
459.GemsFDTD	120	1525	835	1527	834	<b>1527</b>	<b>834</b>	120	1525	835	1527	834	<b>1527</b>	<b>834</b>
465.tonto	120	<b>604</b>	<b>1950</b>	597	1980	606	1950	120	573	2060	<b>576</b>	<b>2050</b>	583	2030
470.lbm	120	990	1670	993	1660	<b>991</b>	<b>1660</b>	120	990	1670	993	1660	<b>991</b>	<b>1660</b>
481.wrf	120	<b>827</b>	<b>1620</b>	828	1620	827	1620	120	820	1630	<b>818</b>	<b>1640</b>	818	1640
482.sphinx3	120	1501	1560	<b>1500</b>	<b>1560</b>	1499	1560	120	1496	1560	1492	1570	<b>1494</b>	<b>1570</b>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**IBM Corporation**

**SPECfp\_rate2006 = 1740**

IBM Flex System x480 X6  
(Intel Xeon E7-4890 v2, 2.80 GHz)

**SPECfp\_rate\_base2006 = 1690**

**CPU2006 license:** 11  
**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation

**Test date:** Jul-2014  
**Hardware Availability:** Jun-2014  
**Software Availability:** Nov-2013

## Platform Notes

Operating Mode set to Maximum Performance in BIOS  
Memory Data Scrambling Disabled  
Patrol Scrub Disabled  
Sysinfo program /cpu2006.1.2\_14.0\_aug2013/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on newport-rhel6.5 Wed Jul 2 06:34:14 2014

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:  
<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

```
From /proc/cpuinfo
model name      : Intel(R) Xeon(R) CPU E7-4890 v2 @ 2.80GHz
 4 "physical id"s (chips)
 120 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  cpu cores      : 15
  siblings       : 30
  physical 0:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
  physical 1:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
  physical 2:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
  physical 3:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
cache size      : 38400 KB
```

```
From /proc/meminfo
MemTotal:      1058503308 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.5 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux newport-rhel6.5 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013 x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Jun 29 22:18 last=5
```

```
SPEC is set to: /cpu2006.1.2_14.0_aug2013
Filesystem                Type      Size  Used Avail Use% Mounted on
/dev/mapper/vg_newportrhel6-lv_root ext4      265G   8.5G  243G   4% /
```

```
Additional information from dmidecode:
BIOS IBM  -[N2E107JUS-1.00]- 05/03/2014
Memory:
```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**IBM Corporation**

IBM Flex System x480 X6  
(Intel Xeon E7-4890 v2, 2.80 GHz)

**SPECfp\_rate2006 = 1740**

**SPECfp\_rate\_base2006 = 1690**

**CPU2006 license:** 11  
**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation

**Test date:** Jul-2014  
**Hardware Availability:** Jun-2014  
**Software Availability:** Nov-2013

## Platform Notes (Continued)

32x Hynix HMT42GR7AFR4A-PB 16 GB 1333 MHz 2 rank  
32x NO DIMM Unknown  
32x Samsung M393B2G70QH0-YK0 16 GB 1333 MHz 2 rank

(End of data from sysinfo program)

## General Notes

Environment variables set by runspec before the start of the run:

LD\_LIBRARY\_PATH = "/cpu2006.1.2\_14.0\_aug2013/libs/32:/cpu2006.1.2\_14.0\_aug2013/libs/64:/cpu2006.1.2\_14.0\_aug2013/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled

Filesystem page cache cleared with:

echo 1> /proc/sys/vm/drop\_caches

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Base Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64

416.gamess: -DSPEC\_CPU\_LP64

433.milc: -DSPEC\_CPU\_LP64

434.zeusmp: -DSPEC\_CPU\_LP64

435.gromacs: -DSPEC\_CPU\_LP64 -nofor\_main

436.cactusADM: -DSPEC\_CPU\_LP64 -nofor\_main

437.leslie3d: -DSPEC\_CPU\_LP64

444.namd: -DSPEC\_CPU\_LP64

447.dealII: -DSPEC\_CPU\_LP64

450.soplex: -DSPEC\_CPU\_LP64

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**IBM Corporation**

IBM Flex System x480 X6  
(Intel Xeon E7-4890 v2, 2.80 GHz)

**SPECfp\_rate2006 = 1740**

**SPECfp\_rate\_base2006 = 1690**

**CPU2006 license:** 11

**Test sponsor:** IBM Corporation

**Tested by:** IBM Corporation

**Test date:** Jul-2014

**Hardware Availability:** Jun-2014

**Software Availability:** Nov-2013

## Base Portability Flags (Continued)

```

453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

```

## Base Optimization Flags

C benchmarks:

```

-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

```

C++ benchmarks:

```

-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

```

Fortran benchmarks:

```

-xAVX -ipo -O3 -no-prec-div -opt-prefetch

```

Benchmarks using both Fortran and C:

```

-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

```

## Peak Compiler Invocation

C benchmarks (except as noted below):

```

icc -m64

```

```

482.sphinx3: icc -m32

```

C++ benchmarks (except as noted below):

```

icpc -m64

```

```

450.soplex: icpc -m32

```

Fortran benchmarks:

```

ifort -m64

```

Benchmarks using both Fortran and C:

```

icc -m64 ifort -m64

```



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**IBM Corporation**

IBM Flex System x480 X6  
(Intel Xeon E7-4890 v2, 2.80 GHz)

**SPECfp\_rate2006 = 1740**

**SPECfp\_rate\_base2006 = 1690**

**CPU2006 license:** 11

**Test sponsor:** IBM Corporation

**Tested by:** IBM Corporation

**Test date:** Jul-2014

**Hardware Availability:** Jun-2014

**Software Availability:** Nov-2013

## Peak Portability Flags

```

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

```

## Peak Optimization Flags

C benchmarks:

```

433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
         -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -auto-ilp32

```

```

470.lbm: basepeak = yes

```

```

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
            -unroll2

```

C++ benchmarks:

```

444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
         -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -fno-alias -auto-ilp32

```

```

447.dealII: basepeak = yes

```

```

450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
         -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -opt-malloc-options=3

```

```

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
         -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -unroll4 -ansi-alias

```

Fortran benchmarks:

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**IBM Corporation**

IBM Flex System x480 X6  
(Intel Xeon E7-4890 v2, 2.80 GHz)

**SPECfp\_rate2006 = 1740**

**SPECfp\_rate\_base2006 = 1690**

**CPU2006 license:** 11  
**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation

**Test date:** Jul-2014  
**Hardware Availability:** Jun-2014  
**Software Availability:** Nov-2013

## Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto  
-inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2) -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -auto-ilp32

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-A.html>

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-A.xml>

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Tue Aug 12 13:15:44 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 12 August 2014.